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Appendix A:

Document Evaluation Tool

Name of Document:

_____

_____

Origin of Assessment/Monitoring Protocol (Federal Agency, NGO, etc):

_____

State: Washington_____ Oregon_____California_____

Frequency of use of Assessment/Monitoring tool: _____

Area of text:_____

Search Results:

Location in text:

Reference:

Native____ _____

Aq. Plants_____ Aq. Animals_____Riparian Weeds_____ Riparian Animals_____

Other_____

Introduc*____ _____

Aq. Plants_____ Aq. Animals_____Riparian Weeds_____ Riparian Animals_____

Other_____

Invas*_____ _____

Aq. Plants_____ Aq. Animals_____Riparian Weeds_____ Riparian Animals_____

Other_____

Nuisance____ _____

Aq. Plants_____ Aq. Animals_____Riparian Weeds_____ Riparian Animals_____

Other_____

Alien_____ _____

Aq. Plants_____ Aq. Animals_____Riparian Weeds_____ Riparian Animals_____

Other_____

Exotic_____ _____

Aq. Plants_____ Aq. Animals_____Riparian Weeds_____ Riparian Animals_____

Other_____

Indigenous_____ _____

Aq. Plants_____ Aq. Animals_____Riparian Weeds_____ Riparian Animals_____

Other_____

Method of Assessment:

Quantitative Assessment_____ Qualitative Assessment_____

Does document have distinct section on Invasive species?_____

On Aquatic Invasive Species?_____

If yes, Describe:

_____

_____

_____

Does Document reference AIS as an impact to Watershed health?_____

In what Context?

_____

_____

_____

Mentions following species:

_____

_____

_____

Does document address methods to:

Prevent Introductions?

_____

_____

_____

Detect New Introductions?

_____

_____

_____

Monitor Existing Invasions?

_____

_____

_____

Control Existing Invasions?

_____

_____

_____

Focus of Data:

Maps of distribution?_____

Species lists?_____

Reporting Numbers?_____

Prevention Programs mentioned?_____

Recognized as an issue to be explored? Yes_____ No_____

Essence of focus on ANS (Integrated into overall assessment, or distinct):

_____

_____

_____

_____

_____

General Comments:

_____

_____

_____

_____

_____

_____

_____

_____

Appendix B:

Aquatic Nuisance Species Survey

Please return before **August 15, 2003** to:

Aquatic Nuisance Species Survey
c/o Linda Jauron-Mills
5012 SW Slavin Rd #7
Portland, Oregon 97239
Code_____

Thank you for taking the time to respond to the survey. There are four subject areas: general questions pertaining to aquatic invasive and training/educational needs, watershed assessments, watershed monitoring, and watershed restoration.

General Questions

To what degree does your watershed group see Aquatic invasive Species as a threat to the health of your watershed?

Minimal Threat 1 2 3 4 Extreme Threat
Don't Know ☐

To what degree does your watershed group see Aquatic invasive Species as a threat to success of watershed restoration efforts?

Minimal Threat 1 2 3 4 Extreme Threat

Don't Know ☐

What is your awareness of:

	Never heard of them (1)	**Don't know if Species is in our watershed (2)**	**Species not currently in our watershed (3)**	**Species in our Watershed (4)**
Nutria (*Myocaster coypu*)	1	2	3	4
Spartina spp.	1	2	3	4
European Green Crab (*Carcinus maenas*)	1	2	3	4
Zebra Mussels (*Dreissena polymorpha*)	1	2	3	4
Chinese Mitten Crab (*Eriocheir sinensis*)	1	2	3	4
Caulerpa taxifolia	1	2	3	4
Hydrilla verticillata	1	2	3	4
New Zealand Mud Snail (*Potamopyrgus antipodarium*)	1	2	3	4
Japanese Oyster Drill (*Ceratostoma inornatum*)	1	2	3	4
American Bullfrog	1	2	3	4
Common carp	1	2	3	4

Freshwatere Asian clams (Corbicula)	1	2	3	4
Estuarine Asian clams (Potamocorbula)	1	2	3	4
Atlantic Salmon (*Salmo salar*)	1	2	3	4
South American Waterweed, Elodea (*Egeria densa*)	1	2	3	4

Watershed Assessments

How recently has your Watershed Council conducted a Watershed Assessment?

Date completed, or anticipated completion date: _____

What Assessment Protocol(s) did you use?

_____

_____

Are non-native species currently included in your watershed assessments?

Yes☐ No☐ Don't Know☐

If yes, what non-native species are included (please list)?

Marine, estuarine, riparian and freshwater Aquatic Plants_____

Marine, estuarine, riparian and freshwater Aquatic animals_____

Other (e.g., pathogens):
_____

Please circle any species listed above, if assessment includes distribution map.

Watershed Monitoring

Please fill out the following table regarding categories of monitoring activity:

Monitoring category	**Frequency**	**Primary protocol/ guideline followed**
Water Quality		
Habitat		
Invasive Spp.		
Other:		
Other:		

What non-native species are monitored)?

None ☐

Same species as in Assessment question above ☐

[Marine, estuarine, riparian and freshwater Aquatic Plants_____

Marine, estuarine, riparian and freshwater Aquatic animals_____

Other (i.e. Pathogens):
_____

Please circle any species listed above, if monitoring includes distribution map.

Watershed Restoration/Action Plans

Has your watershed group developed a watershed restoration/action plan?

Yes ☐ No☐ If so, when?_____

What Guidelines did you use to help develop the watershed restoration/action plan?

_____

_____

Does your watershed restoration/action plan include aquatic/riparian non-native species eradication? Yes ☐ No ☐

If so, please describe briefly and list which species are addressed

_____

_____

Does your watershed restoration/action plan include aquatic/riparian non-native species long-term control ? Yes ☐ No ☐

If so, please describe briefly and list which species are addressed

_____

_____

Does your watershed restoration/action plan include aquatic/riparian non-native species prevention? Yes ☐ No ☐

If so, please describe briefly and list which species are addressed

_____

_____

What information on Aquatic Nuisance Species management would be helpful to your Watershed Council?

Least Helpful →	1	2	3	4 → Most Helpful	Don't Know – D/K
How to Prevent Aquatic Nuisance Species Introductions in your Watershed	1	2	3	4	D/K
How to Monitor For Aquatic Nuisance Species in your Watershed	1	2	3	4	D/K
How to Detect Aquatic Nuisance Species in your Watershed	1	2	3	4	D/K
How to Control/Eradicate Aquatic Nuisance Species in your Watershed	1	2	3	4	D/K

What type of informational materials would be valuable to your Watershed Council, to facilitate management of Aquatic Nuisance Species?

Least Helpful→ 1 2 3 4 →Most Helpful	Don't Know – D/K
Videos	D/K
Guidance Manuals	D/K
Workshops	D/K
Pilot Project designed to develop Field Tools and detection Methods	D/K
Web site	D/K

What other materials/methods would your Watershed Council find useful?

_____

_____

If a Training Workshop were offered regarding AIS management would it be most valuable to your Watershed Council if:

It was offered during the:	Winter	Spring	Summer	Fall
It was offered: (Time of day)	Evening	Weekday	Weekend	

What training topics regarding Aquatic Nuisance Species, would be of the most value to your Watershed Council?

_____

_____

The Most Useful way to help my Watershed Council incorporate Aquatic Nuisance Species into our overall focus would be to:

_____

_____

Other Comments:

_____

_____

_____

_____

_____

_____

_____

Thank you again for taking the time to complete this survey.

A**ppendix C**

Cover Letter- ANS Survey

July 20, 2003

Dear

As you may know, aquatic invasive species (AIS) like mitten crabs and zebra mussels pose a threat to West Coast watersheds. The National Sea Grant Program has recently approved funding to develop tools and training that will help West Coast watershed groups incorporate AIS into watershed assessment, monitoring, restoration, and other management efforts. My graduate project at Oregon State University, funded through the Western Regional Panel on Aquatic Nuisance Species, and administered by Oregon Sea Grant, is designed to identify the most effective options for helping increase the capacity of watershed councils to deal with aquatic invasive species that already occupy or threaten watersheds in coastal California, Oregon, and Washington. We believe that as a front line entity, watershed groups play a vital role in early detection, monitoring, and prevention of aquatic invasive species. However, it is also clear that this topic may be an area in which watershed councils need additional technical and educational support.

Given your role as a watershed group coordinator, I am asking for your help in this needs assessment by completing the enclosed survey and return it in the self-addressed stamped envelope provided by August 15th. I understand that you are subject to many such requests, and I've made an effort to avoid unnecessary questions. I estimate it will take 15-20 minutes for you to complete the survey. Again, please remember that this survey is not an academic exercise. The results will be used to guide a new federally funded project that will produce new guidance materials, training workshops, pilot project opportunities and other tools to help watershed councils deal with the aquatic invasive species issue. Your responses, together with others, will be combined and used for statistical summaries only. Your participation in this study is voluntary and you may refuse to answer any question. However, your participation is very important to the study.

The answers you provide will be kept confidential to the extent permitted by law. Special precautions have been established to protect the confidentiality of your responses. The number on your questionnaire will be removed once your questionnaire has been returned. We use the number to contact those who have not returned their questionnaire, so we do not burden those who have responded. Your questionnaire will be destroyed once your responses have been tallied. There are no foreseeable risks to you as a participant in this project; nor are there any direct benefits. However, your participation is extremely valued.

If you have any questions about the survey, please contact me at (541) 737-2342 or by e-mail at jauronmi@coas.oregonstate.edu. If I am not available when you call, please leave a message and I will call back. If you would like a copy of the final report, please don't hesitate to contact me.

You may also contact Paul Heimowitz with any questions you may have regarding either the survey or the study, at 503-872-2763, or email: Paul_Heimowitz@fws.gov
If you have questions about your rights as a participant in this research project, please contact the Oregon State University Institutional Review Board (IRB) Human Protections Administrator at (541) 737-3437 or by e-mail at IRB@oregonstate.edu.

Thank you for your help. We appreciate your cooperation.

Sincerely,

Linda Jauron-Mills
Masters Candidate
Marine Resource Management Program
College of Oceanic and Atmospheric Sciences
Oregon State University

Appendix D:

IRB Description of Project

Aquatic Nuisance Species Survey
Paul Heimowitz,
Primary Investigator

Description of Project

This project is a survey of watershed council coordinators in Washington, Oregon, and California, to determine their awareness of aquatic nuisance species*, and the potential threat these organisms pose to their watersheds. The survey will ask questions regarding assessment and monitoring of their watersheds, and whether the protocols and guidelines they use for assessment/monitoring, address the presence and impact of aquatic nuisance species on their watersheds. This will help identify gaps in current assessment and monitoring protocols. The survey is also designed to find out what types of training materials would be of most value to their watershed councils, to assist them in addressing aquatic nuisance species issues.

*Aquatic nuisance species are non-native species, aquatic in nature, which, when introduced into an ecosystem, may alter habitat, or outcompete native species.

Participant Population

Approximately 150 coastal watershed council coordinators in Oregon, Washington, and California, will be mailed surveys with cover letters. Method of selection is geographical. The participant population is <u>not</u> restricted to any gender or ethnic group.

Methods and Procedures

Participants will receive the survey and cover letter by mail in a single envelope. A self addressed stamped envelope will be included for survey return. They may opt out of the survey by simply not returning it. A code number will be used, to identify those surveys that have been returned, and to sort results into broad categories (i.e., rural watershed, urban watershed, etc.). When surveys are returned, the code will be matched to a master list for tracking purposes, and then the code will be removed from the survey. The master code list and all completed surveys will be kept in a locked filing cabinet, with access limited to the student researcher. We are estimating 20 minutes for completion of the survey.

Aquatic Nuisance Species Survey
Paul Heimowitz,
Primary Investigator

We would like to get a 40% return rate. If we have not received 40% of the surveys after 2 weeks, we will contact watershed groups that have not returned their surveys, with a reminder letter. The reminder letter will be a modified version of the original cover letter. One week after the reminder letter goes out, if we have still not reached our target percentage, we will contact non-responders by email, or phone, to remind them about the survey.

Survey results will be compiled and presented to the funding agency (the Western Regional Panel on Aquatic Nuisance Species), and will be used to identify educational needs for watershed groups, in regard to Aquatic Nuisance Species monitoring, prevention, and control.

Risks

There are no foreseeable risks to participants.

Benefits

There are no direct benefits to participants.

Compensation

There will be no compensation to participants.

Informed Consent Process

The cover letter included with the survey will contain information pertaining to informed consent, and participants will be able to opt out of the survey by not returning it.

Anonymity and Confidentiality

Names of participants will not be attached to the surveys. Codes will be removed from surveys upon receipt.

Appendix E:

Raw Narrative Comments

Selected Comments
I'm checking with the various agencies and consultants in the region. In the Carmel River Watershed we have no in depth management of the C.R. Lagoon.
Our biggest challenge is having the volunteer enthusiasm to follow through on the many opportunities we have to improve this habitat. We partner best when we are in a supportive role.
Sno. Co. Noxious weed control board monitors invasive species on a daily basis. Control efforts are underway for Spartina and knotweed.
In the late 1980's, we were concerned about loss of shellfish areas. That is what our watershed plan addressed. Responses were provided by the action plan staff.
We have had some problems controlling the depth of our lake. El Nino/La Nina have first drained, and then blocked the outflow, creating flooding, etc. One good thing did occur. The salt water intrusion killed most of the noxious weeds. (Unfortunately, they have returned with this year's low rainfall, warm weather, and shallow water).
the team does have a member who happens to be on the WA state noxious weed control board. She is our informant on the topic.
We work primarily with legislation and planning threats, not with hands-on watershed assessments.
Please share the results of your survey with us when you are finished.
Invasive species are not the top priority in our watershed at this time
As a non-profit volunteer citizen watershed council, we have no paid staff. We see a great need for education in the local govt. and citizenry and focus on trying to obtain this.
Maybe we have a problem, but don't know it. How does a watershed diagnose the problem?
I'm a relatively new watershed coordinator and would appreciate any international material available
(LN cont.) Nothing is monitored on a watershed basis; may be gearing up to do so. Relationship of various species to Chinook salmon recovery. Controlling aquatic N.S. at specific restoration sites.

Liner Notes
Salmo Farmed in watershed. Will have map with vegetation Management plan when completed this winter. We would have to partner with another agency or organization to take on salt water invasives.
We have Grant to eradicate Knotweed in one river. Note on information- How to fund this? (Question 4) Klallam Co. has department on all this.
Not currently monitoring for Water Quality.
Curry County has an action plan, but no one is doing anything!!
I am referring to invasive plants, knotweed, reed Canarygrass, etc. Strategic plans-Whatcom County is working on a WRIA plan
Hydrilla might be in watershed, not sure.
Whatcom CD does not have this information. We are involved with resource management on agricultural lands.
Circled d/k directly under "what information on ANS management would be helpful to your watershed council?"
"However, some groups are looking at Knotweed infestations
Potentially extreme threat if the Fred Mill (sp?) pier for ocean going (bilge pumping) vessels is permitted.
We are also concerned about eurasian millfoil and mahogany clams, both present in our watershed
We would like a copy. Maybe just inform us where it is on a web site- available for downloading-
Our organization does not monitor, but partner organization does-Team Arundo del Norte, They are working on district map of Arundo
We are not a watershed council. We don't monitor and we don’t have scientific expertise
Currently our efforts focus on dam removal.
Note: Our watershed group(s) is focused on Chinook salmon recovery. The watershed group does not know (question 1) because there's virtually no information available to make this judgement. Data Gap: No program exists that routinely monitors for or documents the presence and location of non-native species in the Green River watershed. The implications of non-native species are not well understood.

Suggestions
Focus in the damage to the watershed
Make this extension so attractive that someone would readily volunteer to coordinate.
Reference materials
Make the direct link between fish production and noxious weeds.
Get grant opportunities to act.
Have it included in a watershed planning WAC (Washington Administrative Code)
Remediate our Lake (Garrison)
Provide workshop materials and speakers
Make politicians aware-need funding
Hold a workshop
Designate agency contact, provide leadership & funding of efforts, provide information, paid staff to coordinate the efforts by watershed or by county.
Further education on problems they could cause, and how to prevent and /or eradicate them WITHOUT harming other aquatic species
Data to connect control of aquatic weeds with salmon recovery
Conduct a workshop and follow up w/Pilot Project
Include a look at whether ANS is a Big issue and how to prevent it from being one.
Provide outreach and education about those species presently identified in the watershed & ways to monitor and control the spread and future invasion
Contact us soon so that we can factor this into the work plan for our watershed plan.
Help us understand and recognize problems in this watershed so we can act as advocates for local government action. Educational materials would be helpful.
Provide us examples of what other watersheds are doing. Maybe verbage from their plans-also what species are likely to be able to live in our watershed (Wash State)
Undertake a risk analysis of potential threats and develop appropriate strategies where significant risk exists to Chinook salmon.

Requests for Training Components
You tell me
What agencies, organizations are ready to partner with us.
Recognition materials/training
Control of noxious weeds in or near fish bearing waters
Harm species do to watershed. Some don't get it.
Identification of ANS and how to control
General information and control techniques
How to control, How to prevent

Requests for Training Components
What is out there, what to watch for, what the harm is, What to do
Methods of invasive plant control in riparian areas-mechanical, chemical, and manual.
Better removal and Identification methods.
Species list for the area, eradication, prevention tools
Prevention and eradication
How to ID, general education on impacts to all watersheds. Resources to assist in protection from ANS
How to detect, monitor and control invasive exotics; which invasive exotics are priority risks in our area. Also, distribution maps and info on those species we already have present in the watershed.
Info re: Aquatic Plants and animals that could possibly be invasive and what the impacts they have on the habitat would be, and how to eradicate them if we find them.
How to prevent introductions of ANS; how to control ANS if present
Avoiding introduction into our Watersheds- Detecting the presence in our w/s
Identification!!
Only targeted workshop info would be helpful, irregardless of day or time. 1. Focused brain dump of people's knowledge of the presence & location of ANS's and 2. Relationship to salmon habitat and salmon recovery under the Endangered species act

Additional requests
Progress reports of awareness in --- watersheds with similar fish species, i.e. steelhead.
Funding opportunities
FYI Watershed control no longer exists. Was created only for the plan.
Fact sheets, newsletters, funding, technical support. (Note: pilot project was circled twice)
In April we will be doing a weeklong training. We could use all of the above-mentioned tools in the training-CD ROMs w/ info might also be helpful- Electronic mailings w/educational info to forward.
Points of contact to discuss issues for various AIS
Relationships of Aquatic Nuisance Species to Chinook Salmon, Control of Aquatic Nuisance Sp @ restoration sites/marine, freshwater

Appendix F:

List of Watershed Groups Targeted in Survey

California Watershed Groups
Addison Valley Watershed Association
Alameda Creek Alliance
Alameda-Contra Costa Working Group
Albion River Watershed Association
Alhambra Creek Watershed CRMP Program
Carmel River Steelhead Association
Carmel River Watershed Council
Central Coast RC&D Council
Central Coast Salmon Enhancement, Inc.
Chetco River Watershed Council
Cleveland National Forest Foundation
Co. of San Diego Conservation Plan. Group
Coastal Watershed Council
County of Orange Watershed Projects
East Bay Citizens for Creek Restoration
Eel River Watershed Improvement Group
Friends of Adobe Creek
Friends of Alhambra Creek
Friends of Corte Madera Creek
Friends of Creeks in Urban Settings
Friends of the Eel River
Friends of Islais Creek
Friends of Lobos Creek
Friends of Orinda Creeks
Friends of San Francisco Creek
Friends of San Francisquito Creek
Friends of San Leandro Creek
Friends of Tecolote Canyon
Friends of the Creek
Friends of the Eel River
Friends of the Estuary at Morro Bay
Friends of the Garcia River
Friends of the Los Angeles River

California Watershed Groups
Friends of the Navarro Watershed
Friends of the Santa Margarita River
Friends of the Trinity River
Garcia River Watershed Advisory Group, c/o Watershed Services Center
Garrapata Creek Watershed Council
Goleta Slough Management Comm. c/o Pat Saley and Associates
Heal The Bay
Klamath-Trinity River Coalition
Laguna Canyon Conservancy
Malibu Cr. Watershed Adv. Council
Mattole Restoration Council
Monterey Bay Salmon and Trout Project
N. California Fisheries Rest. Foundation
Northern Klamath Bioregional Group
Ormond Beach Observers
Ormond Beach Task Force
Petaluma River Council
Redwood Coast Watershed Alliance
Russian River Watershed Council
Russian River Watershed Protection Comm.
San Diego Co. Dept. of Planning & Land Use
San Diego Multiple Species C.P., c/o Metro. Waste Water Dept
SANDAG
San Dieguito River Valley Joint Powers Authority
San Francisquito Creek Watershed Council
San Luis Rey River Coop. Plan Advisory Comm.
Santa Clara Basin Watershed Management Intiative
Santa Margarita River Wtrshd Mngmt Plan
Scott Creek Watershed Council
Smith River Advisory Council
Southern Sonoma County RCD
South Fork Trinity River Land Conservancy
Stone Lagoon Action Committee
Tijuana Watershed International Reserve Project
Tomales Bay Watershed Council
Tri-County F.I.S.H Team

California Watershed Groups
Urban Creeks Council

Washington Watershed Groups
Pipers Creek Watershed Council, c/o Seattle Enginnering Dept.
Point No Point Treaty Council
Quilceda/Allen Creeks, c/o Snohomish County Surface Water Mngmt.
Quileute Indian Tribe Quileute Natural Resources
S.W. Puget Sound Watershed Council
Samish Bay Wtrshd Mng. Comm., c/o Skagit Co. P&C Develop.
San Juan Watershed Management Comm., c/o San Juan C.D.
Skagit Watershed Council
Stillagumish Clean Water District, c/o Snohomish County Surface Water Management
Stillagumish Implementation Review Committee, c/o Snohomish County Surface Water Management
Stilliguamish Tribe-Natural Resources
Stilly Snohomish Fisheries Enhancement Task Force
Totten/Little Skookum Wtrshd Mng. Comm., c/o Thurston County Advance Planning
Wahkiakum Conservation District
King County Water And Land Resources Division
Watershed Master Volunteers, c/o Skagit Conservation District
Whatcom Conservation District
Broadview Community Council
Cedar River Council
Chambers/Clover Cr. Wtrshd M.C., c/o Pierce County Water Programs
Chums of Barker Creek
Chums of Maxwelton Salmon Adventure
Clark County Natural Resources Council
Clear Creek Council
Clover Creek Council
Columbia-Pacific RC&D
Discovery Bay Wtrshd Mngmt Comm.
Dungeness River Management Team, c/o Jamestown S'Klallam Tribe
East Kitsap Salmon Habitat Restoration Committee
Fauntleroy Watershed Council

Washington Watershed Groups
Friends of Blackjack Creek
Friends of the Hylebos Wetlands
Green Duwamish Watershed Alliance
Green-Duwamish/WRIA 9 Salmon Recovery Steering Committee, c/o King Co. Dept. of Natural Resources
Henderson Inlet Watershed Council
Hood Canal Coordinating Council
Hood Canal Environmental Council
Hood Canal Watershed Project Center
Jefferson County Water Resources Council
Kamm Creek
Kitsap WRIA 15 Planning Unit
Longfellow Creek Watershed Project
Lower Columbia Fish Enhancement Group
Lower Columbia Fish Recovery Board
Lower Elwha Klallam Tribe
Lower Hood Canal Wtrshd Committee
Mason Conservation District
Mid Puget Sound Fisheries Enhancement Group
MidFORC
Nisqually River Council
Nooksack Recovery Team, c/o Nooksack Salmon Enhancement Association
WRIA 1 Watershed Management Project (Nooksack Basin)
North Creek Watershed Keepers, c/o Adopt-A-Stream Foundation
North Olympic Salmon Coalition
North Whidbey Island, c/o Island County Public Works Dept.
Northwest Indian Fisheries Commission
Padilla Bay Watershed Mngmt. Comm., c/o Skagit County P&C Develop.

Oregon Watershed Groups
Coquille Watershed Association
Coos Watershed Association
Ecola Creek WS Council
Elk-Sixes River WS Council
Euchre Creek WS Council
Floras Creek New River WS Council

Oregon Watershed Groups
Hunter Creek/Pistol River WS Council
Lower Columbia WS Council
Lower Nehalem WS Council
Lower Rogue WS Council
Mary's River WS Council
Mid Coast WS Council
Necanicum WS Council
Nestucca Neskowin WS Council
Netarts Bay WS Council
Nicolai-Wickiup WS Council
Port Orford WS Council
South Coast WS Council
Scappoose Bay WS Council
Siuslaw WS Council
Skipanon WS Council
Southwest Coos WS Council
Tillamook Bay WS Council
Upper Nehalem WS Council
Winchuck WS Council
Young's Bay WS Council

Skipanon River Watershed Report
Oregon Watershed Enhancement Board
Nicolai-Wickiup Watershed Assessment
Peer Review of Watershed Assessment Methods Manual
Aquatic Habitat Assessment-Common Methods
A Reference Guide for monitoring CA Rivers, Streams and Watersheds.
Estuarine and Coastal Marine Waters: Bioassessment and Biocriteria
Technical Guide
Puget Sound Water Quality Action Team
North Coast Watershed Assessment Program Methods Manual
CDFG Aquatic Bioassessment Lab, Bioassessment Worksheet
Youngs Bay Watershed Assessment

Appendix G:

List of search words used in Document Search

Search on "Native"

	Native	Aquatic Plant1	Aquatic Animal1	Riparian Plant1	Riparian Animal1	Location in Text1	Reference1
Skipanon River Watershed Report	Yes	No	Yes	Yes	No	2.4, 2.13, 7.1, 8.2, 9.4, 9.3, Appendix A-18	Notes riparian plants, native grasses, native fish stocks
Oregon Watershed Enhancement Board	Yes	No	No	No	No	IX p 3, 6, Table 3. Ecoregions p.11, IX, p.1,6, table 1, VII Table 2, p 10. VIII, 11, 12 Native Vertebrates, X p.24, IX p 3, Eco regions	Interaction between native and stocked species, Stocking history, ESA listings, Non-native fish intro from channel modification, Native vs. Introduced,
Nicolai-Wickiup Watershed Assessment	Yes	No	Yes	Yes	No	2.14, 2.22, 7.1, 8.2, 9.4.2	Lack of Native Chinook. Planting Native Riparian Species
Peer Review of Watershed Assessment Methods Manual	No	No	No	No	No		
Aquatic Habitat Assessment-Common Methods	Yes	No	No	No	No	235	Acclimatized Species-Glossary term
A Reference Guide for monitoring CA Rivers, Streams and Watersheds.	Yes	No	No	Yes	No	70, 81, 91, 106.	"Native Plantings," also in bird survey, reptile and amphibian survey, Macroinvertebrates

Estuarine and Coastal Marine Waters: Bioassessment and Biocriteria Technical Guide	Yes	No	No	No	No	49	Native Species
Puget Sound Water Quality Action Team	Yes	No	No	No	No	23	Bioassay, Test Animals
North Coast Watershed Assessment Program Methods Manual	Yes	No	No	No	No	33, 98, 37, 42.	Native Salmon, Native Fish. No Mention of Non Native
CDFG Aquatic Bioassessment Lab, Bioassessment Worksheet	Yes	No	No	Yes	No	2	Noted Native cover, Table on Vegetation
Youngs Bay Watershed Assessment	Yes	No	Yes	Yes	No	2.22, 7.12, 8.2, A-12, A-5	Natives Extirpated, Native Fish. Non-Native fish, Native Veg. (Appendix),
Percent "Yes" Responses	90.90909	0	27.27273	45.45455	0		

Search on "Introd"*

	Introd*	Aquatic Plant2	Aquatic Animal2	Riparian Plant2	Riparian Animal2	Location In text2	Reference2
Skipanon River Watershed Report	Yes	No	Yes	No	No	2.1	Introduced Fish-stocked fish
Oregon Watershed Enhancement Board	Yes	No	No	No	No	3.24,30. VII Table 2. VII table 2	Beaver Introductions, Shrubs., Native Vs Introduced (Same as Above).

Nicolai-Wickiup Watershed Assessment	Yes	No	No	No	No	2.1, 2.14, 2.22, 8.2	Exclusion of introduced Species, Introduced Chinook, Introduced Coho
Peer Review of Watershed Assessment Methods Manual	Yes	No	No	No	No	P47	Sediment
Aquatic Habitat Assessment-Common Methods	Yes	No	No	No	No	356	Weed, Glossary Term
A Reference Guide for monitoring CA Rivers, Streams and Watersheds.	No	No	No	No	No		
Estuarine and Coastal Marine Waters: Bioassessment and Biocriteria Technical Guide	Yes	No	No	No	No	P 65	Habitat influence
Puget Sound Water Quality Action Team	Yes	No	No	No	No	29, 31, 45	Bioassay, Fish Pathology, Int. of Disease, Test animals, Pollution
North Coast Watershed Assessment Program Methods Manual	No	No	No	No	No		
CDFG Aquatic Bioassessment Lab,	No	No	No	No	No		

Bioassessment Worksheet							
Youngs Bay Watershed Assessment	Yes	No	Yes	No	No	2.1, 2.14, 2.22, 8.2	Introduced Fish, Introduced Coho,Chinook
Percent Yes Responses	72.72727	0	18.18182	0	0		

Search on "Invas"*

	Invas*	Aquatic Plant3	Aquatic Animal3	Riparian Plant3	Riparian Animal3	Location In text3	Reference3
Skipanon River Watershed Report	No	No	No	No	No		
Oregon Watershed Enhancement Board	Yes	No	No	Yes	No	Ecoregions p. 47	Streamside Vegetation
Nicolai-Wickiup Watershed Assessment	No	No	No	No	No		
Peer Review of Watershed Assessment Methods Manual	No	No	No	No	No		
Aquatic Habitat Assessment-Common Methods	Yes	No	No	No	No	328	Salt water invasion into freshwater systems
A Reference Guide for monitoring CA Rivers, Streams and Watersheds.	Yes	No	No	No	No	70	invasives

Estuarine and Coastal Marine Waters: Bioassessment and Biocriteria Technical Guide	No	Yes	Yes	No	No	P. 41	Table, Soft bottom Benthos, Kelp beds, pelagic/Demersal fish
Puget Sound Water Quality Action Team	No	No	No	No	No		
North Coast Watershed Assessment Program Methods Manual	No	No	No	No	No		
CDFG Aquatic Bioassessment Lab, Bioassessment Worksheet	No	No	No	No	No		
Youngs Bay Watershed Assessment	No	No	No	No	No		
Percent "Yes" Responses	27.27273	9.090909	9.090909	9.090909	0		

Search on "Nuisance"

	Nuisance	Aquatic Plant4	Aquatic Animal4	Riparian Plant4	Riparian Animal4	Location In text4	Reference4
Skipanon River Watershed Report	No	No	No	No	No		
Oregon Watershed Enhancement Board	Yes	Yes	No	No	No	EPA Pub. In Bibliography, VIII p 17	Algal Growth. (Not defined as non-native)

Nicolai-Wickiup Watershed Assessment	No	No	No	No	No		
Peer Review of Watershed Assessment Methods Manual	No	No	No	No	No		
Aquatic Habitat Assessment-Common Methods	Yes	Yes	No	No	No	199, 310	Nuisance Plant growth, Glossary term
A Reference Guide for monitoring CA Rivers, Streams and Watersheds.	No	No	No	No	No		
Estuarine and Coastal Marine Waters: Bioassessment and Biocriteria Technical Guide	Yes	No	No	No	No	124, 162, 165	Phytoplankton, "Nuisance taxa"
Puget Sound Water Quality Action Team	No	No	No	No	No		
North Coast Watershed Assessment Program Methods Manual	No	No	No	No	No		
CDFG Aquatic Bioassessment Lab, Bioassessment Worksheet	No	No	No	No	No		

Youngs Bay Watershed Assessment	No	No	No	No	No		
Percent "Yes" Responses	27.27273	18.18182	0	0	0		

Search on "Alien"

	Alien	Aquatic Plant5	Aquatic Animal5	Riparian Plant5	Riparian Animal5	Location In text5	Reference5
Skipanon River Watershed Report	No	No	No	No	No		
Oregon Watershed Enhancement Board	No	No	No	No	No		
Nicolai-Wickiup Watershed Assessment	No	No	No	No	No		
Peer Review of Watershed Assessment Methods Manual	No	No	No	No	No		
Aquatic Habitat Assessment-Common Methods	No	No	No	No	No		
A Reference Guide for monitoring CA Rivers, Streams and Watersheds.	No	No	No	No	No		

Estuarine and Coastal Marine Waters: Bioassessment and Biocriteria Technical Guide	No	No	No	No	No		
Puget Sound Water Quality Action Team	No	No	No	No	No		
North Coast Watershed Assessment Program Methods Manual	No	No	No	No	No		
CDFG Aquatic Bioassessment Lab, Bioassessment Worksheet	No	No	No	No	No		
Youngs Bay Watershed Assessment	No	No	No	No	No		
Percent “Yes” Responses	0	0	0	0	0		

Search on “Exotic”

	Exotic	Aquatic Plant6	Aquatic Animal6	Riparian Plant6	Riparian Animal6	Location In text6	Reference6
Skipanon River Watershed Report	Yes	No	No	Yes	No	Appendix A-6	Notes exotic Weeds
Oregon Watershed Enhancement Board	Yes	No	Yes	Yes	No	IX Table 1. Ecoregions p.42,47.	Asks "Native or Exotic?" Stocking history of 8 species. Exotic Vegetation

Nicolai-Wickiup Watershed Assessment	No	No	No	No	No		
Peer Review of Watershed Assessment Methods Manual	No	No	No	No	No		
Aquatic Habitat Assessment-Common Methods	Yes	No	No	No	No	356	Glossary term
A Reference Guide for monitoring CA Rivers, Streams and Watersheds.	No	No	No	No	No		
Estuarine and Coastal Marine Waters: Bioassessment and Biocriteria Technical Guide	Yes	No	No	No	No	48	Exotic species community structure
Puget Sound Water Quality Action Team	Yes	No	No	No	No	23	Bioassay, WDFW regulations
North Coast Watershed Assessment Program Methods Manual	No	No	No	No	No		
CDFG Aquatic Bioassessment Lab, Bioassessment Worksheet	No	No	No	No	No		

Youngs Bay Watershed Assessment	Yes	No	No	Yes	No	A-5	Exotic Weeds
Percent "Yes" Responses	45.45455	0	9.090909	27.27273	0		

Search on "Indigen"*

	Indigen*	Aquatic Plant7	Aquatic Animal7	Riparian Plant7	Riparian Animal7	Location In text7	Reference7
Skipanon River Watershed Report	No	No	No	No	No		
Oregon Watershed Enhancement Board	No	No	No	No	No		
Nicolai-Wickiup Watershed Assessment	No	No	No	No	No		
Peer Review of Watershed Assessment Methods Manual	No	No	No	No	No		
Aquatic Habitat Assessment-Common Methods	Yes	No	No	No	No	293	Glossary term
A Reference Guide for monitoring CA Rivers, Streams and Watersheds.	No	No	No	No	No		
Estuarine and Coastal Marine Waters: Bioassessment and Biocriteria	Yes	No	No	No	No	40, 74, 244	Biotoxicity, Shellfish, fishn wildlife, Desirable, No mention of Non indigenous species

Technical Guide							
Puget Sound Water Quality Action Team	Yes	No	No	No	No	31, 74	Bioassay, Ampleisca-Neanthes
North Coast Watershed Assessment Program Methods Manual	No	No	No	No	No		
CDFG Aquatic Bioassessment Lab, Bioassessment Worksheet	No	No	No	No	No		
Youngs Bay Watershed Assessment	No	No	No	No	No		
Percent "Yes" Responses	27.27273	0	0	0	0		

[D-2] References by Search Word:

Word Referenced	Number of References Pertaining to ANS Found	Context of Reference
Native	10	Non-Native fish Introductions, Interaction Between Native and Stocked fish species, Non-Native Fish Introductions due to channel modifications/dams, Acclimatized Species, Non-Native Fish
Introd*	13	Native vs. Introduced, Introduction of Diseases, Habitat Influences, Glossary notation-Weed, Exclusion of introduced species, Introduced Chinook, Introduced Coho, Introduced Fish,
Invas*	9	Reed Canarygrass, Himalayan Blackberry, Juniper Invasion, Soft Bottom Benthos, Kelp Beds, Pelagic/Demersal Fish, Phytoplankton,
Nuisance	5	Nuisance Algal Growth, Nuisance Taxa, Nuisance Plant Growth, Glossary Reference,
Alien	0	

Exotic	8	"Native or Exotic", Exotic Vegetation, Stocking history, Glossary reference, Exotic Species Community Structure, Bioassay regulations, Exotic Weeds,
Indigenous	2	Glossary reference, Bioassay

[D-5] Essence of Focus on ANS/General Comments:

	Essence of Focus on ANS	General Comments
Skipanon River Watershed Report	Notes introduced fish species, the presence of exotic weeds in riparian habitats. No mention of control or eradication plans.	Replanting of native species in riparian areas.
Oregon Watershed Enhancement Board	Spotty. Mostly riparian weeds, and noting native vs. exotic fish stocks.	Skipped section on Hydrology of Eastern Oregon when performing review.
Nicolai-Wickiup Watershed Assessment	None	Passing reference to using Native Riparian species for replanting. Assumes non-native, but does not mention.
Peer Review of Watershed Assessment Methods Manual		Peer review of Manual, Center for Forestry, College of Natural Resources, Berkeley, standifo@nature.berkeley.edu June 13, 2001
Aquatic Habitat Assessment-Common Methods	Virtually none	Almost all references were as word definitions.
A Reference Guide for monitoring CA Rivers, Streams and Watersheds.	Species are not mentioned as introduced. No Focus on ANS	Protocol focuses on quantification of species in habitat, and flow regimes
Estuarine and Coastal Marine Waters: Bioassessment and Biocriteria Technical Guide		
Puget Sound Water Quality Action Team	Not generally focused on ANS	
North Coast Watershed Assessment Program Methods Manual	No mention of ANS	
CDFG Aquatic Bioassessment Lab, Bioassessment Worksheet	No Focus on ANS	

Youngs Bay Watershed Assessment	ANS not specifically mentioned as issue.	Specifically exclude Non-Native species (2.2) in species count, Relies heavily on previous reports from ODFW/NOAA. Riparian Vegetation restoration to native species mentioned.

[D-6] Method of Assessment

Method of assessment	Distinct section on Invasive Species?	On AIS?	Comments2	AIS impact to WS health?	Context3	Mentions Specific Species?	Context4
Skipanon River Watershed Report	No	No		No		Yes	Fish Listed were taken from ODFW Report. Species were listed, but unclear as to current Status. Carp Chiselmouth, chub, sculpin, Dace, Goldfish, Lamprey, shiners, peamouth, squawfish, stickelback, suckers, terch,and troutperch. Also stocked lakes.
Oregon Watershed Enhancement Board	No	No		No		No	
Nicolai-Wickiup Watershed Assessment	No	No		No		No	
Peer Review of	No	No		No		No	

Watershed Assessment Methods Manual							
Aquatic Habitat Assessment-Common Methods	No	No		No		No	
A Reference Guide for monitoring CA Rivers, Streams and Watersheds.	No	No		No		Yes	not as native vs Non-Native
Estuarine and Coastal Marine Waters: Bioassessment and Biocriteria Technical Guide	No	No		Yes	Impacts on marine environment as source of perturbation	No	
Puget Sound Water Quality Action Team	No	No		No		No	
North Coast Watershed Assessment Program Methods Manual	No	No		No		No	
CDFG Aquatic Bioassessment Lab, Bioassessment Worksheet	No	No		No		No	
Youngs Bay Watershed Assessment	No	No		No		Yes	not complete, only selected fish, some native (p.2.2 table 2.1)
Percent “Yes” Responses	0	0		9.090909		27.27273	

[D-7] Prevention/Detection/Monitoring/Control

	Prevent Intro-ductions?	Context	Detect New Introductions ?	Context	Monitor Existing Invasions ?	Context	Control Existing Invasions ?	Context
Skipanon River Watershed Report	No		No		No		No	
Oregon Watershed Enhancement Board	No		No		No		No	
Nicolai-Wickiup Watershed Assessment	No		No		No		No	
Peer Review of Watershed Assessment Methods Manual	No		No		No		No	
Aquatic Habitat Assessment-Common Methods	No		No		No		No	
A Reference Guide for monitoring CA Rivers, Streams and Watersheds.	No		No		No		No	
Estuarine and Coastal Marine Waters: Bioassessment and Biocriteria Technical Guide	No		No		Yes	Habitat Characterization, Document existing invasions, ID	No	

						of dominant taxa, as %cover/biomass		
Puget Sound Water Quality Action Team	No		No		No		No	
North Coast Watershed Assessment Program Methods Manual	No		No		No		No	
CDFG Aquatic Bioassessment Lab, Bioassessment Worksheet	No		No		No		No	
Youngs Bay Watershed Assessment	No		No		No		No	
Percent "Yes" Responses	0		0		9.090909		0	

[S-2] Number of non-responses due to undeliverable surveys:

	Non-deliverable	Percentage of surveys sent
Washington	6	10.52632
Oregon	3	11.53846
California	14	20
Total	23	15.03268

[S-6] Assessment year (year watershed assessment was completed):

	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1988
Number of responses	1	4	1	0	2	2	1	1	1	0	1	1	2

"In Progress"- 3 responses
"No Funding"- 1 response

[S-7] Assessment Protocols Used:

Assessment Protocol Used	
"Chinook Recovery"	1
OWEB (Oregon Watershed Enhancement Board)	7
SSHIAP	1
Streamkeepers Field Guide	1
USFS Level II Stream Surveys	1
CDFG (California Department of Fish and Game)	2
USGS Stream Protocols	1
Internally Developed Protocols	1
USDA Natural Resources Inventory	1
Review of Current Info	1
Washington Conservation Commission Limiting Factors Analysis	1
Washington State Department of Ecology for Watershed Planning	1
Not Specific	1
EPA Protocols	1
TMDL	1
Proper Functioning Conditional Visual Assessment	1

[S-10] Water Quality:

Frequency	Primary Protocol/Guideline followed
Once a year	
Monthly for Fecal	Unknown
Quarterly	EPA
Varies	Washington State
2-5 years	Shellfish
Starting 18 Aug 2003, 3 months	Oregon Department of Environmental Quality, STD methods
Monthly	Ecology WA

Monthly	DEQ
n/r	n/r
Monthly	Dept of Ecology
Weekly	ODEQ, OWEB
2x/month	DEQ
Monthly, DO/pH/Turbidity	SKFG
	Fecal coliform, temp, turbidity
Varies	Varies
3-5/ year	EPA
Summers	DEQ
	Mont. By N. Marine Sanc. Citizen Monitoring
Haven't gotten funding	
Weekly/monthly	Cal dept health services for mariculture; Mann Co. for recreation; state and national parks for recreation
Unsure	Unsure
1/yr (irregular intervals)	Bioassessment, enteroccus, pH, Conductivity, turbidity temp, Dissolved o2
Semi annual	Water quality sampling guide, conservation district does this
Weekly in summer/ biweekly in winter	DEQ

[S-11] Habitat monitoring:

Frequency	Primary Protocol/Guideline followed
Year Round	
None, currently	
Ongoing	Modified Hankin Reeves
Done last 5 years	Washington State
Qualitative evaluation	None
Project Specific	Sno.Co Developed
Ongoing	SSHIAP
Periodically	WDFW/ ------fish and wildlife
Annual	Spawning habitat, ODFW
Project specific as needed	ODFW
Monthly	SKFG
	Instream flows, riparian corridor
Varies	Varies
1-2/year	EPA
	Salmonid Habitat Man.
Salmonid Spawner surveys	Weekly during season (natl parks)

	Have used DFG protocols in past
None	
1x year	Implementation/some effectiveness on projects
	WCC Limiting Factors Analysis

[S-12] Other monitoring:

Frequency	Primary Protocol/Guideline followed
We monitor macroinvertebrates in the fall. Students count stonefly exoskeletons in the spring.	
	Purple loosestrife, Nutria, elodea
	Chinook redds
None	
	Project effectiveness monitoring
Road/ stream crossings	Adapted road inventory protocol

[S-17] When was plan developed?

	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1990	1989	1988
Number of responses	1	0	3	2	4	1	1	0	1	0	1	1	1	1	1

"In Progress" = 5 responses

[S-18] What guidelines did you use to develop the watershed restoration/action plan?

Oregon Plan
No formal guidelines; it was community initiated, with assistance from the city.
TMDL

Not there yet- in process
WAC 900-Non-point pollution planning
Unknown
Based on assessment and other data collected post assessment
Growth management, shoreline regs, current laws.
OWEB sources
OWEB
Subject of a long grant proposal recently funded
For the 2003 plan, we have used the guidelines from the 2514 process
Washington state's
We are basing it off of similar programs developed in the Skagit Watershed
CDFG salmonid Habitat Protocols, Oregon Watershed
Morro Bay (CA) and Tillamook Bay (OR) Watershed plans
We developed a good Roads Clear Creek Program collaborating with Dept of Fish and Game.
Community based stakeholder process CRMP
Washington state legislature provided funding. Wa Dept of Ecology provided general guidelines
NOAA fisheries; viable salmonid population approach

Statistics by State:
California

[C-1] (Relates to S-4)

	Threat to health of Watershed?	**Threat to success of restoration efforts?**
Mode	2	2
Median	3	2
Mean	2.857143	2.285714
Standard Deviation	0.899735	0.95119

[C-2] (Relates to S-5)

	Nutria	**Spartina (Cordgrass)**	**Carcinus maenas (Green Crab)**	**Dreissena polymorpha (Zebra Mussel)**	**Eriocheir sinensis (Chinese Mitten Crab)**	**Caluerpa taxifolia**	**Hydrilla verticillata (Water Thyme)**
Mode	2	2	2	2	2	2	2
Median	2	2	2	2	2	1.5	1.5

Mean	1.8	1.9	1.5	1.8	2.1	1.4	1.3
Standard Deviation	1.135292	1.449138	0.971825	1.032796	1.37032	0.966092	0.823273

	Potamopyrgus antipodarium (N.Z. Mudsnail)	Ceratostoma inornatum (Japanese Oyster Drill)	American Bullfrog	Common Carp	Corbicula (Asian Clam)	Potamocorbula (Asian Clam)	Salmo (Atlantic Salmon)	Egeria (Elodea, or Waterweed)
Mode	2	2	4	4	2	2	2	2
Median	1.5	1.5	3	2.5	2	2	2	2
Mean	1.4	1.4	2.5	2.5	1.4	1.4	1.9	1.5
Standard Deviation	0.966092	0.966092	1.715938	1.581139	0.843274	0.843274	1.100505	0.849837

[C-3] (Relates to S-25)

	Prevent introductions	How to Monitor	How to Detect	How to Control/ Eradicate
Mode	4	4	4	4
Median	4	3.5	3.5	4
Mean	3	2.8	2.8	3
Standard Deviation	1.632993	1.619328	1.619328	1.632993

[C-4] (Relates to S-26)

	Videos	Guidance Manuals	Workshops	Pilot Project	Web Site
Mode	4	4	4	4	4
Median	2.5	3.5	3	3.5	3
Mean	2.4	2.7	2.6	2.8	2.6
Standard Deviation	1.646545	1.636392	1.577621	1.619328	1.646545

Oregon

[O-1] (Relates to S-4)

	Threat to health of Watershed?	Threat to success of restoration efforts?
Mode	3	3
Median	3	3
Mean	3	3
Standard Deviation	0.632456	0.707107

[O-2] (Relates to S-5)

	Nutria	Spartina (Cordgrass)	Carcinus maenas (Green Crab)	Dreissena polymorpha (Zebra Mussel)	Eriocheir sinensis (Chinese Mitten Crab)	Caluerpa taxifolia	Hydrilla verticillata (Water Thyme)
Mode	3	4	2	2	2	2	2
Median	3	4	2	2	2	2	2
Mean	3	3.571429	2.571429	2.571429	2.285714	2.428571	2.142857
Standard Deviation	0.707107	0.786796	0.786796	0.786796	0.48795	0.534522	0.377964

	Potamopyrgus antipodarium (N.Z. Mudsnail)	Ceratostoma inornatum (Japanese Oyster Drill)	American Bullfrog	Common Carp	Corbicula (Asian Clam)	Potamocorbula (Asian Clam)	Salmo (Atlantic Salmon)	Egeria (Elodea, or Waterweed)
Mode	2	2	4	4	2	2	3	2
Median	2	2	3	3	2	2	3	2
Mean	2.428571	2.285714	3.142857	3.142857	2.285714	2.142857	2.714286	2.571429
Standard Deviation	0.786796	0.48795	0.899735	0.899735	0.48795	0.690066	0.48795	0.9759

[O-3] (Relates to S-25)

	Prevent introductions	How to Monitor	How to Detect	How to Control/ Eradicate
Mode	4	3	3	4
Median	4	3	3	4
Mean	3.571429	3.285714	3.428571	3.714286
Standard Deviation	0.534522	0.755929	0.534522	0.48795

[O-4] (Relates to S-26)

	Videos	Guidance Manuals	Workshops	Pilot Project	Web Site
Mode	3	4	4	4	3
Median	3	4	4	4	3
Mean	3.285714	3.428571	3.714286	3.857143	3
Standard Deviation	0.755929	0.786796	0.48795	0.377964	0.816497

Washington

[W-1] (Relates to S-4)

	Threat to health of Watershed?	Threat to success of restoration efforts?
Mode	3	3
Median	3	3
Mean	2.6875	2.625
Standard Deviation	1.25	1.204159

[W-2] (Relates to S-5)

	Nutria	Spartina (Cordgrass)	Carcinus maenas (Green Crab)	Dreissena polymorpha (Zebra Mussel)	Eriocheir sinensis (Chinese Mitten Crab)	Caluerpa taxifolia	Hydrilla verticillata (Water Thyme)
Mode	2	4	3	2	2	1	1
Median	2	3	2	2	2	1	1
Mean	2.176471	2.882353	2.352941	2.294118	2.058824	1.411765	1.647059
Standard Deviation	1.333946	1.166316	0.931476	0.771744	0.899346	0.712287	1.169464

	Potamopyrgus antipodarium (N.Z. Mudsnail)	Ceratostoma inornatum (Japanese Oyster Drill)	American Bullfrog	Common Carp	Corbicula (Asian Clam)	Potamocorbula (Asian Clam)	Salmo (Atlantic Salmon)	Egeria (Elodea, or Waterweed)
Mode	2	2	2	2	2	2	3	2
Median	2	2	2	3	2	2	3	2
Mean	1.705882	2	2.470588	2.647059	2	1.705882	3	2.352941
Standard Deviation	0.919559	1.172604	1.328422	1.320094	1.06066	0.985184	1	1.271868

[W-3] (Relates to S-25)

	Prevent introductions	How to Monitor	How to Detect	How to Control/ Eradicate
Mode	4	2	4	4
Median	3	2	3	2
Mean	2.588235	2.470588	2.705882	2.588235
Standard Deviation	1.460258	1.230734	1.311712	1.416811

[W-4] (Relates to S-26)

	Videos	Guidance Manuals	Workshops	Pilot Project	Web Site
Mode	2	2	4	3	4
Median	2	2	2	2	3
Mean	1.647059	2.352941	2.176471	2	2.588235
Standard Deviation	1.320094	1.221739	1.467791	1.224745	1.502449